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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,828	09/11/2006	Alexandre G.E. Kosmala	103.0003US/PCT	3747

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EXAMINER
CRAIG, DWIN M

ART UNIT	PAPER NUMBER
2123	

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03/14/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,828	KOSMALA ET AL.	
	Examiner	Art Unit	
	DWIN M. CRAIG	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/18/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/21/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-64 have been presented for examination.

Priority

2. Applicants' claim to priority to United Kingdom Patent Application number 0226623.7 filed on 11/15/2002 is hereby acknowledged.

Patent Eligible Subject Matter

3. Applicants' claimed method, specifically claim 64 includes an explicit tie to a machine, in the instant case a controller. As regards system claim 33 there is claimed a storage medium, it is noted that in Applicants' disclosure on page 25 that there is a discussion regarding carrier waves, further it is noted that on this same page is disclosed a list of storage devices and claim 33 storage medium is being interpreted to include only the storage devices and not the loading or transporting processes disclosed in the following paragraph.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. It is noted that not until claim(s) 28, 30 and 32 is the claimed method being performed on a computer, therefore based on the current claim language it is unclear if the claimed method is inherently tied to a machine. Since there is no transformation

taking place in the claimed subject matter, claims 1-27 appear to be directed to an abstract mathematical/theoretical algorithm for optimizing an objective function, which is not tied either explicitly nor explicitly to a machine and is therefore directed to non-statutory subject matter as mere abstractions are patent ineligible subject matter. See MPEP section 2106.01.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,992,519 to Ramakrishnan et al. in view of U.S. Patent Publication 2002/0169785 to Netemeyer et al.

5.1 As regards independent claims 1, 33 and 64, Ramakrishnan et al. teaches, a reservoir model, see Figure 1 item 12, as well as a controller, see Figure 4 and Col. 1 lines 56-57, "It is another objective of the invention to provide methods for the active and/or automated control of oil reservoirs." Note the term reservoirs in plural and the disclosure of controlling, further the disclosure of the term reservoir provides a suggestion of controlling a network of oil reservoirs and determining an optimized objective function, see Col. 3 lines 35-62 and using an objective function see Figure 3 as well as Col. 5 lines 54-67.

However, Ramakrishnan et al. does not expressly disclose a well network model.

Netemeyer et al. teaches a well network model, see Figure(s) 1 & 4 as well as paragraph(s) [0025]-[0050].

Ramakrishnan et al. and Netemeyer et al. are analogous art because they both come from the same problem solving area of modeling oil reservoirs.

At the time of the invention, it would have been obvious, to an artisan of ordinary skill in the reservoir modeling arts to have modeled a network of oil reservoirs.

The motivation for doing so would have been, to provide a more realistic model which then provide for a better simulation result, see paragraph [0023] of Netemeyer et al.

Therefore, it would have been obvious to combine the teachings of Netemeyer et al. with the teachings of Ramakrishnan et al. in order to obtain the invention as disclosed in claims 1-64.

5.2 As regards claim 2, Ramakrishnan et al. discloses optimizing a reservoir model according to an objective function, see Col. 3 lines 35-62.

5.3 As regards claim 3, Ramakrishnan et al. does not expressly disclose a well network model, however, Netemeyer et al. teaches a well network model, see above.

5.4 As regards claim 4, Ramakrishnan et al. teaches optimizing a reservoir model using an objective function, see above, however Ramakrishnan et al. does not expressly teach a well network model, however, Netemeyer et al. teaches a well network model, see above.

5.5 As regards claim 5, Ramakrishnan et al. teaches optimization of a reservoir model however, Ramakrishnan et al. does not expressly disclose a second objective function that relates to the well network model.

Netemeyer et al. teaches a well network model, and optimization see paragraph [0021].

At the time of the invention, it would have been obvious to an artisan of ordinary skill in programming arts to have used an objective function to optimize the performance of a network of oil reservoirs as expressly disclosed in the Netemeyer et al. The suggestion for doing so is provided in Ramakrishnan et al. which would have provided for optimization in order to improve the economics of the network of wells, see Figure 1, item 60 "Economic Evaluation" as well as Col. 3, lines 35-62.

5.6 As regards claims 6-32 Ramakrishnan et al. suggests performing optimization on multiple oil reservoirs, see Col. 1 lines 56-57, “It is another objective of the invention to provide

methods for the active and/or automated control of oil reservoirs." Note the term reservoirs in plural, further Ramakrishnan et al. clearly teaches optimization using an objective function see Figure 3 as well as Col. 5 lines 54-67. However, Ramakrishnan et al. does not explicitly disclose modeling a network of oil reservoirs.

Netemeyer et al. teaches modeling a network of oil reservoirs, when viewed this disclosure in light of the teachings of using an objective function as disclosed in Ramakrishnan et al. makes the claimed simultaneous optimization of objective functions obvious.

Further claims 7-11 are teaching different configurations of performing the optimizations that an artisan of ordinary skill would discover through experimentation, see MPEP section 2144.5 states in part;

Optimization Within Prior Art Conditions or Through Routine Experimentation Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claim 12 is a claim to a mixed mode optimization module, it would be obvious to experiment with different modes.

Claims 14-23 appear to be claims to wellbores and different components of wellbores, Ramakrishnan et al. expressly teaches wellbores, see Col. 1 lines 19-27.

Claim 24 is directed towards a processing plant model, both Ramakrishnan et al. and Netemeyer et al. teach processing plant model, because the model a reservoir that processes petroleum being pumped out of the ground.

Claims 25-32 are directed towards implementation on a computer of the claimed methods, Ramakrishnan et al. teaches computer implementation, see Col. 3 lines 62-67 and Col. 4.

Claims 34-63 are made obvious by the express teachings of Ramakrishnan et al. and Netemeyer et al. see above.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DWIN M. CRAIG whose telephone number is (571)272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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